

Amendments to the claims
Complete listing of the claims

1. (Currently Amended) A balloon for use in a balloon catheter including a tubing, said balloon having a high strength for resisting bursting during over inflation, and said balloon comprising a nano-composite reinforced polymer matrix consisting essentially of including a polymer and one of a nano composite selected from carbon nano-tubes, a nano clay or nano-ceramic fibers together with a small amount of lubricant to aid dispersion of the nanocomposite during blending of the matrix, said polymer and nano composite matrix having been formed a balloon for medical applications and having a high strength for resisting bursting during over inflation by controlling the volume or weight percent of nano composite in the matrix relative to the polymer such that the nano composite is between 0.20% and 20% by weight of the matrix and the polymer is between 80 % and 99.80% of the matrix, by controlling the "wetting" of the nano composite in the matrix; and by controlling the orientation of the nano composite within the matrix.

2. (Currently Amended) ~~A nano-tube reinforced polymer including one of~~ The balloon of claim 1 wherein said polymer is nylon 12 or PET and ~~carbon nano-tubes formed into a balloon for medical applications and having a high strength for resisting bursting during over inflation.~~

3. (Currently Amended) A The balloon of claim 1 being fused to one end of the tubing of the balloon catheter comprising a plastic tubing, a balloon fused to one end portion of said tubing, and said balloon being made of a carbon nano-tube reinforced polymer.

4. (Previously Presented) The balloon catheter of claim 3 wherein said balloon comprises between 99.75 and 99.99% by weight polymer and between 0.25 and 10 by weight carbon nano-tubes.

5. (Previously Presented) The balloon catheter of claim 4 wherein said balloon comprises approximately 3% by weight carbon nano-tubes.

6. (Currently Amended) The balloon catheter of claim 3 wherein said polymer is ~~one of~~ nylon 12 or PET.

7. (Currently Amended) A ~~The~~ balloon catheter ~~comprising a plastic tubing, a balloon fused to one end portion of said tubing, and said balloon being made of~~ claim 3 wherein said nano composite is a nano-ceramic fiber reinforced polymer.

8. (Original) The balloon catheter of claim 7 wherein said balloon comprises between 99.75 and 90.00% by weight polymer and between 0.025 and 10.00% by weight nano-ceramic fibers.

9. (Currently Amended) The balloon catheter of claim 8 ~~wherein said balloon comprises~~ comprising approximately 3% by weight nano-ceramic fibers.

10. (Currently Amended) The balloon catheter of claim 7 wherein said polymer is ~~one of~~ nylon 12 or PET.

11. (Currently Amended) The balloon catheter of claim 7 wherein said nano-ceramic fibers are alumina fibers.

12. (Currently Amended) A ~~The~~ balloon catheter ~~comprising a plastic tubing, a balloon fused to one end portion of said tubing, and said balloon being made of~~ claim 3 wherein said nano composite is a nano-clay reinforced polymer.

13. (Currently Amended) The balloon catheter of claim 12 wherein said balloon comprises between 99.75 and 90.00% by weight polymer and between 0.025 and 10.00% by weight nano-clay.

14.(Currently Amended) The balloon ~~catheter~~ of claim 13 ~~wherein said balloon comprises~~ comprising approximately 3% by weight nano-clay.

15.(Currently Amended) The balloon ~~catheter~~ of claim 12 wherein said polymer is ~~one of~~ nylon 12 or PET.

16.(New) The balloon of claim 12 wherein wetted platelets of nano clay are dispersed in the matrix and are oriented whereby the platelets can slide with respect to one another to provide more elastic behavior in a plane parallel to the platelets and a more stiff behavior in an orthogonal direction of the platelets.

17.(New) The balloon of claim 1 being formed by extruding a polymer and nano composite matrix into a thin wall tube that is subsequently heat stretched in a controlled manner to further reduce a wall thickness to of the tube to desired dimensions, followed by blow molding the stretched tube into a desired balloon shape.

18.(New) The balloon of claim 17 wherein the stretched tube is formed with the nano-tubes oriented primarily along the axis of the balloon.

19.(New) The balloon of claim 17 wherein the polymer and nano composite matrix is rolled and stretched to orient the nano-tubes in one direction and then the tubes are formed such that the nano-tubes are originally oriented tangentially in the wall of the tube to enhance the resistance of the balloon tangentially.

20.(New) The balloon of claim 1 being formed by cutting a polymer and nano composite sheets of specific thickness, fusing the sheets into tubes whose wall thickness is considerably greater than necessary for making the balloon followed by drawing down tubes from the laminated sheets to desired dimensions and forming the balloon by heating a thermoplastic tube made from the laminated sheets under internal pressure within blow molding.

21.(New) The balloon of claim 20 wherein the stretched tubes are formed with the nano-tubes oriented primarily along the axis of the balloon.

22.(New) The balloon of claim 20 wherein the polymer and nano composite matrix is rolled and stretched to orient the nano-tubes in one direction and then the tubes are formed such that the nano-tubes are originally oriented tangentially in the wall of the tube to enhance the resistance of the balloon tangentially.

23.(New) The balloon of claim 1 wherein the polymer and nano composite matrix is formed by dispersing the nano composite to a monomer matrix followed by polymerization of the monomer and nano composite matrix.

24.(New) The balloon of claim 1 wherein the polymer and nano composite matrix is formed by dispersing the selected nano composite in the matrix during melt compounding of the matrix.

25.(New) A balloon for use in a balloon catheter including a tubing, said balloon having a high strength for resisting bursting during over inflation, said balloon comprising a nano-composite reinforced polymer matrix including a polymer and a nano composite selected from carbon nano-tubes, a nano clay or nano-ceramic fibers, said polymer and nano composite matrix having been formed by dispersing the selected nano composite in the matrix with a small amount of lubricant during melt compounding of the matrix followed by extruding a tube and then blow molding the balloon in the tube.